

Amendments to the Claims

Please add new claims 21-28, as follows:

21. A constrained-envelope digital communications transmitter circuit comprising:

a pulse-spreading filter configured to receive a quadrature phase-point signal stream of digitized quadrature phase points and produce a filtered signal stream, said filtered signal stream exhibiting energy corresponding to each phase point spread throughout a plurality of unit baud intervals;

a constrained-envelope generator coupled to said pulse-spreading filter and configured to produce a constrained-bandwidth error signal stream;

a combining circuit coupled to said pulse-spreading filter and to said constrained-envelope generator, said combining circuit configured to combine said filtered signal stream and said constrained-bandwidth error signal stream to produce a constrained-envelope signal stream;

a digital linearizer coupled to said combining circuit and configured to pre-distort said constrained-envelope signal stream into a pre-distorted digital signal stream;

a digital-to-analog converter coupled to said digital linearizer and configured to produce an analog baseband signal from said pre-distorted digital signal stream; and

a radio-frequency amplifying circuit configured to generate a radio-frequency broadcast signal from said analog baseband signal.

22. A digital communications transmitter circuit as claimed in claim 21 wherein said pulse-spreading filter is a Nyquist-type filter.

23. A digital communications transmitter circuit as claimed in claim 21 wherein said combining circuit is configured to combine said filtered signal stream and said constrained-bandwidth error signal stream to reduce a peak magnitude component of said filtered signal stream.

24. A digital communications transmitter circuit as claimed in claim 21 wherein:

said pulse-spreading filter is a first pulse-spreading filter;

said transmitter circuit additionally comprises a delay element coupled between said first pulse-spreading filter and said combining circuit; and

said constrained-envelope generator comprises a second pulse-spreading filter coupled to said combining circuit.

25. A digital communications transmitter circuit as claimed in claim 24 wherein:

said first pulse-spreading filter is configured so that each phase point is transformed into a Nyquist-type datum burst extending over a plurality of unit baud intervals, having a datum-burst peak value occurring in one of said plurality of unit baud intervals and datum-burst zero values occurring substantially at integral unit baud intervals away from said datum-burst peak value, so that said filtered signal stream in each unit baud interval substantially equals the sum of said Nyquist-type datum bursts from a plurality of phase points; and

said constrained-envelope generator is configured so that said second pulse-spreading filter receives error pulses, transforms each error pulse into a Nyquist-type error burst extending over a plurality of unit baud intervals, having an error-burst peak value occurring in one of said plurality of unit baud intervals and error-burst zero values occurring substantially

at integral unit baud intervals away from said error-burst peak value, so that said constrained-bandwidth error signal stream in each unit baud interval substantially equals the sum of said Nyquist-type error bursts from a plurality of error pulses.

26. A digital communications transmitter circuit as claimed in claim 21 wherein:

said filtered signal stream is a stream of complex digital values, with each of said complex digital values exhibiting a peak magnitude component; and

said constrained-envelope generator is configured to determine when ones of said peak magnitude components exceed a threshold value.

27. A digital communications transmitter circuit as claimed in claim 26 wherein:

said transmitter circuit additionally comprises a phase mapper coupled to said pulse-spreading filter and configured to select said digitized quadrature phase points from a phase-point constellation, said phase-point constellation having a maximum-magnitude phase point; and

said threshold value is a magnitude value approximately equal to a magnitude of said maximum-magnitude phase point.

28. A digital communications transmitter circuit as claimed in claim 21 additionally comprising an interleaver coupled to said phase mapper.

Status of All Patent Claims

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| 1. Pending | 20. Pending |
| 2. Pending | 21. Pending |
| 3. Pending | 22. Pending |
| 4. Pending | 23. Pending |
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Explanation of Support for Claim Changes

Claim 21:

Claim 21 is a new claim that finds support in claim 11, as amended in the preliminary amendment. In addition, support may be found in Fig. 2 at items 148, 150, and 152. And, support may be found at column 14 lines 4-36. Support for the pulse-spreading filter element may be found at item 76 in Fig. 2 and at column 6 line 65 through column 7 line 28.

Claim 22:

Claim 22 is a new claim that finds support at column 6 line 65 through column 7 line 28.

Claim 23:

Claim 23 is a new claim that finds support in Fig. 2 and at column 9 lines 47-65.

Claim 24:

Claim 24 is a new claim that finds support in Fig. 2 and at column 12 lines 21-34.

Claim 25:

Claim 25 is a new claim that finds support in Fig. 2 and at column 12 lines 21-45.

Claim 26:

Claim 26 is a new claim that finds support in originally-filed claims 9 and 10, Figs. 2 and 4, and at column 9 line 66 through column 10 line 39.

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Claim 27:

Claim 27 is a new claim that finds support in Figs. 2-4, at column 5 lines 1-46, and at column 9 line 66 through column 10 line 39.

Claim 28:

Claim 28 is a new claim that finds support in Fig. 2 and at column 4 lines 51-67.